REMARKS

The examiner has rejected claims 1, 11 and 21 as being anticipated under 35 USC §102(b) in view of US patent 5,513,214 to Gozzo. The remaining dependent claims are rejected under 35 USC §103(a) as being obvious in view of various combinations of Gozzo, patent 5,673,293 to Scarpa et al., patent 5,363,408 to Paik et al., patent 5,848,105 to Gardner et al., and patent 6,289,046 to Takeuchi et al. Claims 1-4, 11-14 and 21 have been amended, and claims 1-35 are active in the application.

The examiner points out that Gozzo shows switches 130, 150 for operating feedback equalizer in two modes: a linear feedback mode and a decision feedback mode. The examiner concludes that Gozzo is response to individual signal samples to switch the feedback equalizer between linear feedback and decision feedback modes. However as more fully pointed out below, Gozzo does not actually say that switches 130 150 are operated automatically. Nor does Gozzo show responsiveness to a "single individual signal sample" as recited in the amended independent claims 1, 11 and 21.

US PATENT 5,513,214 to GOZZO

The cited prior art to Gozzo shows a method for estimating equalizer performance responsive to a sequence of signal samples. Gozzo shows a receiver method for computing the mean square error (MSE) for both a linear feedback equalizer (LFE) and a decision feedback equalizer (DFE). Gozzo suggests that the MSE calculation could be used for real-time adaptation of the equalizer complexity (column 3, line 40) such as filter length or taps.

Most significantly, Gozzo does not suggest that the MSE, so calculated, should operate switches 130, 150 for switching between LFE and DFE. Gozzo says nothing about how or when switches 130 and 140 should be operated.

In applicants' disclosure a feedback equalizer is operated in one of two modes based on an individual signal sample basis. Claims 1-4, 11-14, and 21 have been amended to make it clear that the control for switching the decision feedback equalizer (DFE) between the first mode (soft decision samples) and the second mode (hard decision samples) on an individual signal sample basis, means that the DFE switch control switches the DFE modes responsive to one signal sample, i.e., responsive to "a single individual signal sample." The prior art does not show a DFE switched from one mode to the other based on a single individual signal sample. The prior art to the present invention shows switching a DFE from one mode to the other based on a plurality of signal samples.

Gozzo calculates the mean square error term over a "sequence" such as a training sequence. See Gozzo claim 1, line 27 and claim 10, line 33, which recite a "training sequence". Gozzo claim 20 recites an "information sequence" at line 53. The key point here is that Gozzo is calculating his MSE over a plurality (a sequence) of received symbols and not a "single individual" symbol.

Thus in summary, Gozzo does not show or suggest the claimed subject matter for two reasons:

1: GOZZO DOES NOT SWITCH BETWEEN EQUALIZER MODES

Gozo does not say how switches 130, 150 should be operated. Gozzo discloses a method for calculating the mean square error for each mode or positions of the switches 130, 150. Gozzo's claim 20 sets forth Gozzo's method very clearly. Gozzo has two equations for computing the mean square error, one for LFE mode and another method for DFE mode, but Gozzo recites nothing about how switching occurs between the two modes.

2: GOZZO DOES NOT RESPOND TO A SINGLE INDIVIDUAL SIGNAL SAMPLE

Gozzo's calculation of MSE uses an information sequence or a training sequence, i.e., a plurality of symbols. In contrast, applicants' amended claims recite, "switching between first and second modes "responsive to a single individual signal sample." Thus, even if, agruendo, Gozzo used his MSE calculation to switch DFE modes (which he does not), it would not be "responsive to a single individual signal sample."

Thus, claims 1, 11 and 21 are not shown or obvious from Gozzo. The remaining cited prior art to Scarpa et al., Paik et al., Gardner et al., and Takcuchi et al. are not seen to add to the disclosure of Gozzo to render the claimed subject matter obvious.

Dependent claims 3-8, 13-19

A signal modulated onto a carrier is rotating in the complex plane. Before such signal can be reliably decoded, it must be derotated (demodulated). Until the constellation is completely derotated, constellation points furthest from the origin of the complex plane have greater errors, are therefore less reliable than constellation points nearer to the origin.

US PATENT 5,363,408 to SCARPA ET AL.

Scarpa et al. is cited to show the conventional use of a "box" area centered about each constellation point for use in a slicer to determine the nearest constellation point for a hard decision. Scarpa et al. do not show the use of box to determine quality level of the received signal sample as recited in claims 3-8 and 13-19. In particular Scarpa et al. do not show the use of box "centered about the origin of said complex plane"..."wherein said single individual signal sample is at a first quality level when outside a box of width w, said box of width w being centered about the origin of said complex plane, and said single individual signal sample is at a second quality level when inside said box of width w...." as in claims 3-8 and 13-19. Nor do Scarpa et al. show the use of a reliability area comprising a circle in said complex plane as in claims 5-8 and 15-18.

Most important, the cited prior art or any combinations of them do not show the use of a signal "measuring the quality level of said single individual signal sample" to "switch[ing] between first and second modes" of a decision feedback equalizer "responsive to a single individual signal sample" as in claims 2-8 and 12-18.

The remaining claims are patentable for the same reasons as the independent claims upon which each respectively depends.

For the foregoing reasons, and in light of the amendments made herein, applicants respectfully request that the examiner withdraw the rejections under 35 USC §102(b) and 35 USC §103(a), allow claims 1-35 as amended, and pass the present application to issue.

RECEIVED
CENTRAL FAX CENTER
SEP 0 9 2003

Respectfully submitted,
by

_____ DATED: _Sept 9, 2003_

ALLAN J. JACOBSON
Attorney for applicant
Registration No. 29,079
13310 Summit Square Center
Route 413 & Doublewoods Road
Langhorne, Pennsylvania 19047

telephone:(215) 579-1426

OFFICIAL

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington D.C. 20231 on

Date of deposit

NAME

Signature

Date of Signature

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that each of the within identified papers is being facsimile transmitted to the Patent and Trademark Office on___Sept 9, 2003

Allan Jacobson
NAME

_____
Signature
Sept 9 2003
Date of Signature